

*Title of Paper* : **Data Based Econometric Model Building for the Household Consumption of Non-Marketed Fuelwood**

*Author* : **Ms. Alma S. Bello, Forest Management Bureau**

*Discussant* : **Ms. Irma C. Exconde, Department of Energy**

### **DISCUSSANT'S PAPER**

The measurement of the country's economic growth, through the System of National Income Accounts, is one of the most important regular undertaking of the Philippine Statistical System since it provides a comprehensive valuation of the contribution of the various sectors in the country's domestic production. We are aware that the NSCB has continuously improving on its system to be more responsive to the developments in the different economic sectors and to improve on the accuracy of generating various statistics. This paper on the econometric model building for the household consumption of non-marketed fuelwood is a valuable reference in improving the current system particularly on the Forestry sector on the supply side of the income accounts and correspondingly on the personal consumption expenditure (PCE) on the demand side. Taking these into consideration, the paper should have included further discussion on the resulting contribution of the non-marketed fuelwood to the total forestry production and the PCE as components of the Gross Domestic Product (GDP). The relative value of the non-marketed fuelwood shall serve as a validation of the estimation results.

The statistical method ( econometrics) used is acceptable given the limitation in the data, the 1989 and 1995 Household Energy Consumption Survey (HECS). As expected, the resulting  $R^2$  are 62% and 69%, for urban and rural models, respectively. With more available information in the future, the model can be further improved. The next HECS is underway, wherein enumeration will start on October 8, 2004. Similar items as in 1995 HECS are included in this follow-up survey. The survey includes not only energy consumption of various fuels but

also includes energy efficiency devices including those utilizing fuelwood. As in 1995, it also includes questions on accessibility of both conventional fuels (LPG, kerosene) as well as non-conventional fuels ( fuelwood and other agriculture-based fuels). These are some of the data items which the author included in the recommendations as necessary for future study. It is suggested that a close coordination with concerned statistical agencies be done to address the other data concerns such as data on child labor.

On the policy-making perspective, it may be necessary to review issuances that may have direct or indirect impacts on the collection or purchase of fuelwood in specific areas of the country. This includes declaration of some areas as protected areas or are ban from logging. In future studies, qualitative factors may also be considered in the development of the model in determining the future consumption of non-marketed fuelwood. It is a good effort of the study to consider in the initial list of independent variable the female field labor which corresponds to gender issues in rural areas. In the rural sector, women can potentially integrate woodfuel production into their local production systems and resource management activities. Thus they can contribute to the rural wood energy based industries by way of relieving industries from over-exploitation, and organising local production to connect directly with the end users.

Parallel to the concern being addressed by the paper, which is the valuation of household consumption of non-marketed fuelwood, the contribution of non-conventional or traditional sources of energy such as fuelwood and other agricultural wastes in the total primary energy mix has long been an issue in the energy sector. It has been argued that the energy produced by conventional fuels such as oil, coal, natural gas has more value added relative to those fuels used for cooking in the rural areas such as fuelwood and charcoal. Based on historical records of DOE, 45% to 50% of total primary energy mix is non-conventional/traditional which provides the significant contribution to the 50%

energy self-sufficiency<sup>1</sup> of the country. In our experience in the energy sector, in the absence of a monthly or annual survey to capture actual consumption of this non-marketed commodities, the utilization of these traditional fuels were estimated using the agricultural production of bagasse, wood, rice husk, rice hull, coconut, etc. multiplied by the residue factor based on household surveys made in the early seventies. Structural changes have surely happened since then and this production approach may need improvement. So the model building approach done on this paper can be used to improve on the current monitoring process of the DOE.

In summary, the non-marketed forest products such as fuelwood is an important contributor to rural economy specifically to subsistence support, cash income and employment to the rural poor. In particular, household energy requirement particularly in remote rural areas are dependent on this traditional fuels in their daily requirement for cooking. However, emphasis on sustainable management of remaining natural forests and conservation of biodiversity may reduce the sustainable levels of supply and limit the current production possibilities of woody biomass. The results of the model estimation should be analyzed as an integral part of the System of National Accounts and assessment of its policy implications in the socio-economic components of rural development .

---

<sup>1</sup> Energy self-sufficiency is the percentage of indigenous energy resource utilization to the total primary energy consumption and is an indicator of the country's dependence on imported energy sources. The Philippines aim for continued improvement in the energy self-sufficiency.